

We claim:

1. A computer storage medium having instructions encoded therein for controlling an engine of a powertrain in a vehicle
5 on the road, said medium comprising:

code for measuring an error for a first operating condition based on sensor information;

code for determining whether said first operating condition is within a predetermined range of a second operating condition;
10 and

code for updating an adaptively learned parameter for said second operating condition based on said error when said first operating condition is within said predetermined range of said second operating condition.

2. The medium of claim 1 wherein said first operating condition includes a first set of operating conditions.

3. The medium of claim 2 wherein said first set of
20 operating conditions includes current operating conditions.

4. The medium of claim 3 wherein said current set of operating conditions includes engine speed and engine torque.

5. The medium of claim 1 wherein said second operating condition includes a second set of operating conditions.

6. The medium of claim 1 further comprising code for discarding said error when said first operating condition is
30 outside said predetermined range of said second operating condition.

7. The medium of claim 1 wherein said range is a variable range, varying during operation of the engine.

8. The medium of claim 7 wherein said variable range varies
5 depending on said first operating condition.

9. The medium of claim 1 wherein said updating includes filtering said adaptively learned parameter.

10 10. A computer storage medium having instructions encoded therein for controlling an engine of a powertrain in a vehicle on the road, said medium comprising:

code for measuring an error for a first set of vehicle operating conditions based on sensor information;

15 code for determining whether said first set of vehicle operating conditions is within a predetermined range of a second set of vehicle operating conditions saved in memory of said computer;

code for updating an adaptively learned parameter saved in
20 said computer memory, said adaptively learned parameter corresponding to said second set of vehicle operating conditions, said updating said adaptively learned parameter based on said error when said first set of vehicle operating conditions is within said predetermined range of said second set
25 of vehicle operating conditions.

11. The medium of claim 10 wherein said first set of vehicle operating conditions are a current set of vehicle operating conditions.

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12. The medium of claim 10 wherein said set of vehicle operating conditions includes engine speed and engine torque.

13. The medium of claim 10 wherein said set of vehicle operating conditions includes engine speed and engine torque.

5 14. The medium of claim 10 wherein said predetermined range is a variable range depending on said first set of vehicle operating conditions.

10 15. The medium of claim 10 wherein said updating includes filtering said adaptively learned parameter.

15 16. The medium of claim 10 wherein said updating includes adjusting said error based on a parameter indicative of confidence in said error.

20 17. The medium of claim 10 wherein said updating includes adjusting said error based on an actual range from said first set of vehicle operating conditions to said second set of vehicle operating conditions.

25 18. The medium of claim 10 wherein said updated adaptively learned parameter is for said second set of vehicle operating conditions.

30 19. The medium of claim 10 wherein said second set of vehicle operating conditions are determined from as the closest set of operating to said first set of operating conditions.